FLIGHT

The AIRCRAFT ENGINEER & AIRSHIPS

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

1923

Jan. 26 .... Lecture, "Wind Tunnel Work at the N.P.L.," by W. L. Cowley, before I.Ae.E.
Feb. 6–7.... Third Air Conference at the Guildhall
Feb. 9 .... Lecture, "Seaplane Design," by W. O. Manning, before I.Ae.E.
Feb. 23 .... Lecture, "Aerofoils," by Dr. A. P. Thurston, before I.Ae.E.
Mar. 15 .... Entries close for Dutch Height Indicator Competition.
Apl. 12 .... Lecture, "Some Controversial Points in Aircraft Design," by F. T. Hill, before I.Ae.E.
May 11 .... Lecture, "Experimental Flying," by Maj. M. E. A. Wright, before I.Ae.E.
June 25–30 International Air Congress, London
June 30 .... R.A.F. Aerial Pageant
Aug. 6–27 French Gliding Competition, near Cherbourg
Dec. 1 .... Entries close for French Aero Engine Competition

1924

Mar. 1 .... French Aero Engine Competition.

EDITORIAL COMMENT.

IN view of the fact that FLIGHT has for a number of years given greater publicity to articles dealing with the design, construction and operation of seaplanes than has, probably, any other technical journal in the world, and that we have more recently strongly advocated the urgent necessity to the British Empire of developing this type of aircraft, it is a matter for considerable satisfaction to us to note that a very great deal of attention is being paid to this subject just now. The other day, Major Rennie read a paper on Flying Boats before the R.Ae.S., a paper, incidentally, which brought forth a lively discussion, showing that by no means all those present at Major Rennie's lecture agreed with his views. This is all to the good in affording an excellent opportunity for ventilating the numerous problems which confront the designer of this type of seaplane.

Coming of the Seaplane

On February 1, Mr. G. S. Baker, who has been responsible for all the tank tests on model hulls at the N.P.L., will read a paper, also before the R.Ae.S., on "Ten Years' Testing of Model Seaplanes." The information compiled during that period is mostly contained in somewhat scattered volumes, R. and M. notes, etc., and it may be expected that Mr. Baker will, in his paper, bring out the main points which his work has shown to be of importance, and deduce from them not only the lessons which they have to tell, but the lines upon which future developments are most likely to succeed. The paper cannot fail to be of the greatest interest. Incidentally, in this connection, we should like to mention that the attendance at Major Rennie's paper was nothing like as large as it ought to have been, and that in the future it is to be hoped that all who can do so will make a point of being present at these lectures on seaplanes. The design and construction of seaplanes, and more especially flying boats, is a highly specialised business, and, without agreeing with Major Rennie that private firms know nothing about the subject, we do think that the average designer will find that he has a very great deal to learn if and when he is called upon to produce

a seaplane. Hull design is a matter for the closest collaboration between the aircraft designer and the naval architect, and the subject is one which no designer can afford to ignore.

On February 9, Mr. W. O. Manning is reading a paper before the I.Ae.E. on "Seaplane Design." Here Mr. Manning will speak to men whose work has been mostly connected with the practical side of aircraft design and construction, and his paper should be of the very greatest value in elucidating problems which are not, perhaps, realised by those who have interested themselves in the subject mainly in a general way, but which are very real to those intimately connected with the detail work.

Finally, on February 15, Wing-Commander Cave-Brown-Cave will read a paper before the R.Ae.S. entitled "The Practical Aspects of the Seaplane."

Thus, it will be seen that we are threatened by a very epidemic of papers and lectures on seaplanes, a fact which we interpret as an indication of a general awakening to the importance of the subject, and which cannot fail to have the most beneficial effect upon future progress. We congratulate the societies in question on having secured such a large proportion of seaplane lectures, and we feel sure that the day is coming when the British Empire, already well to the fore in seaplane design, will show itself willing and eager to make full use of the advantages which the seaplane has to offer. Then those who are now devoting their energies to the development and perfecting of the science of seaplane design will reap their due reward, by a much more rapid progress than has been possible during the period of apathy and neglect through which the seaplane has passed.

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The Schneider Race

While on the subject of seaplanes, we are reminded that the regulations for this year's contest for the Schneider Cup have now been drawn up, but that the place for the competition has still to be chosen. Last year, soon after the winning of the race at Naples by the Supermarine-Napier "Sea Lion," we ventured to make the suggestion that, if possible, the race should be held over the Channel, between the French and English coasts. Our suggestion has met with considerable approval in France, where *l'Auto* concurs in the desirability of holding the race over a triangular course, including either two turning points on the French coast and one on the English, or *vice versa*. We do not know if it is possible to follow the suggestion, but there is little doubt that the international character of the race would be enhanced if something of the sort could be done.

If, as appears probable, the latter part of August is chosen for the race, weather conditions should be favourable, and it should not be difficult to "borrow" a few destroyers from the British and and French navies for patrolling the course, thus reducing to a minimum the risks run by the competing pilots. We again commend the suggestion to the attention of the Royal Aero Club for their consideration. There may be reasons why it cannot be done, but we think the idea is worth examining.

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Britain at Gothenburg

We have previously referred in these columns to the International Exhibition to be held at Gothenburg, from July 20 to August 12. It now appears probable that France, Germany, Italy and Holland will be represented, and probably several other countries. France has already, we understand, applied for stands at the exhibition for the purpose of showing French private aircraft. Not only so, but M. Laurent Eynac, French Under-Secretary of State for Air, has intimated his intention of sending a Service Squadron to Gothenburg, and has further taken 100 sq. m. of floor space for exhibition purposes. In connection with the exhibition, there will be flying contests and demonstrations at the aerodrome near the exhibition, and doubtless the French squadron will take a prominent part in these.

The question now arises, what is Great Britain doing? As we have repeatedly pointed out in FLIGHT, although we know, and a great many other people know, that British aircraft are second to none, it is no manner of use resting content with that knowledge. Unless we constantly give the world an opportunity of judging of the correctness of this opinion, we shall gradually lose prestige, and with that loss will follow loss of orders.

Now, so far as we can see, the position boils down to this: Our manufacturers cannot well afford the expense of sending machines abroad; nor, we think, can they afford *not* to send machines abroad. It is, therefore, a question of which of the two we can least afford, and in our opinion the answer must be that we can least afford not to send representatives.

The next problem is how to set about it. It may be granted that, with perhaps the exception of one or two firms, private manufacturers cannot stand the expense. The only solution would, therefore, appear to be concerted action by the Society of British Aircraft Constructors. We appreciate that the selection of the types to be sent must be a somewhat delicate matter. But surely there is enough mutual trust and confidence among members of the industry to arrange for certain representative types to be sent. Would it not be possible to make some arrangement whereby the profits from any machines sold as a result of the exhibition were divided among members of the S.B.A.C., the makers of the particular type being, of course, given their fair share of profit and the rest being put into a pool? If no machines were sold the members of the S.B.A.C. would assist one another in defraying the expenses, in proportion, of course, to the financial status of each firm, and, possibly, with the exhibiting firm paying a rather larger proportion.

It is not to be doubted that any favourable impression created abroad, not to mention actual orders, would react favourably on the whole British industry. Are our firms "big" enough, broad-minded enough to see the truth of this argument? We shall see.

We have previously suggested that a squadron of the R.A.F. be sent to Gothenburg. So far we have heard of no actual results, and it is likely that a policy which will not let service machines take part in races at home will not send a service squadron abroad. Nevertheless, the very fact that France is sending one should be one more reason for the participation at Gothenburg by a British squadron. We earnestly recommend the matter to the authorities for their serious consideration. After all, in the past the Navy has, among its many functions, performed that of "showing the flag." As the R.A.F. is now acknowledged to be our first line of defence, should it not begin to take over such functions as this?

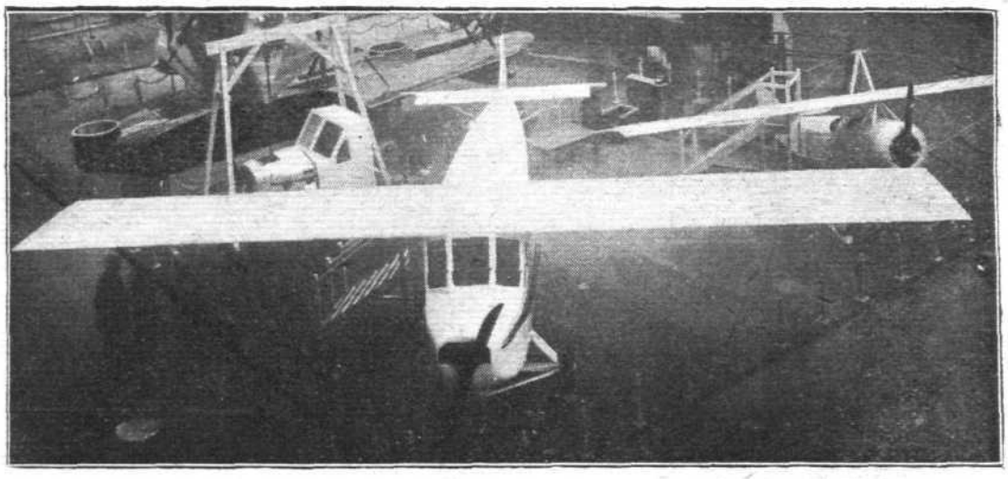
THE PARIS AERO SHOW 1922

By THE TECHNICAL EDITOR

(*Continued from page* 33)

MORANE-SAULNIER, Puteaux (Seine)

THE name of Morane is one of the oldest in French aviation, having from time to time been associated with others, such as Morane-Borel, Morane-Saulnier, as well as standing by itself in indicating early aeroplanes. We have forgotten when the two names of Morane and Saulnier were first coupled together, but at any rate it was before the War, and probably round about 1913. During the years that have gone the combination has endured, and the name Morane-Saulnier was found on a very large percentage of the French machines used during the War. Not only so, but even in this country, where the Grahame-White firm had the concession, a large number of MS's were turned out, and it is not without interest to note that the Zeppelin brought down by Warneford, the first to be " sunk " by an aeroplane, was bombed by a Morane-Saulnier monoplane. Perhaps the type of MS. which did most work was the parasol, and hence it is not surprising that the type has endured to the present day with but few modifications. At the recent Paris Aero Show one of these machines was shown, but as this was of usual type it does not require any description here, having been illustrated and described at length on more than one occasion in FLIGHT. It is somewhat curious, and probably significant, that the semi-cantilever monoplane shown at the previous Paris Show does not appear to have left any traces on MS. developments, except in so far as the commercial machine shown can be said to be influenced by it, which is to an infinitesimal extent only.

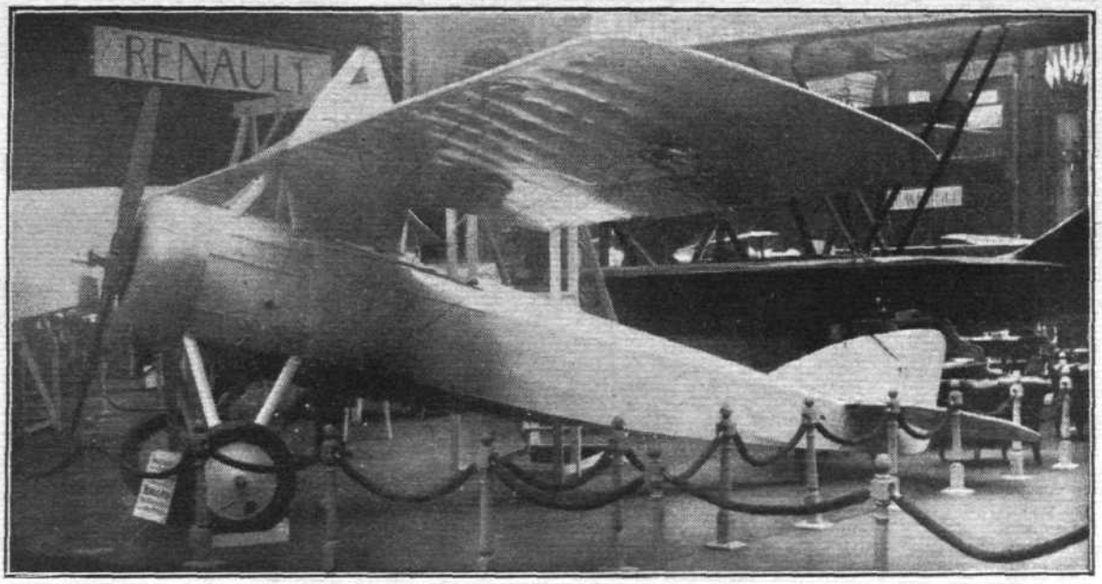


The Morane-Saulnier Cabin Machine: Known as the type A.V., this cantilever monoplane is fitted with a detachable engine unit, in which all engine controls and engine instruments form part of, and are removed with, the unit. In the background may be seen such a unit, mounted on a sectioned portion of a fuselage.

The Moraine-Saulnier cabin machine, type A.V. is not, as some visitors to the Paris exhibition appeared to imagine, intended as a commercial machine in the sense of the word that it is for regular use on any airway. For that purpose, its carrying capacity is too small. Rather is it to be regarded as an owner-pilot's machine or a taxi-'plane. Thus one method of using the machine contemplated by the makers is for meeting passengers who arrive from abroad at some port, and who wish to save time by being flown to Paris or to some other centre. It was realised that such passengers would demand a fair amount of comfort, would require a machine of reasonably high speed, but that, as the number of passengers who could be counted upon would be relatively small, no very large machine would be wanted.

The result of these considerations is the MS. type " A.V.," which is a four-seater, with *conduite interieure*, the pilot occupying one of the four seats inside the cabin. It might have been thought that from here his view would be somewhat restricted, but on entering the cabin and sitting down in the pilot's seat, which is the front one on the port side, it was found that, as a matter of fact, the view is particularly good, owing to the large windows and low position of the engine in relation to the height of the cabin. All the seats for the three passengers and that for the pilot are extremely comfortable, and although the presence of the wing above the cabin darkens the latter to a certain extent, it is imagined that outside, in broad daylight, the cabin is very well lighted.

One of our sketches shows the front portion of the cabin. The pilot, as already mentioned, sits in the front seat on the port side, and in front of him is a comfortably-sloped and extremely well-lighted instrument-board, any instrument on which can be read with a minimum of effort. The compass is placed in front of the seat, on a tall cylindrical box, near the base of which, concentric with it, is the foot bar for the rudder. The foot rests are adjustable so as to suit different pilots. The air-speed indicator is immediately in front of the pilot, where it can be read without difficulty; in fact, the necessary movement of the eyes from looking out over the engine to reading the air-speed indicator is so small that the pilot should be able to watch the machine and the speed almost simultaneously. That this is a necessity in a machine of this type will be realised when it is remembered that, as the pilot is in the cabin, there is no wind to warn him of a



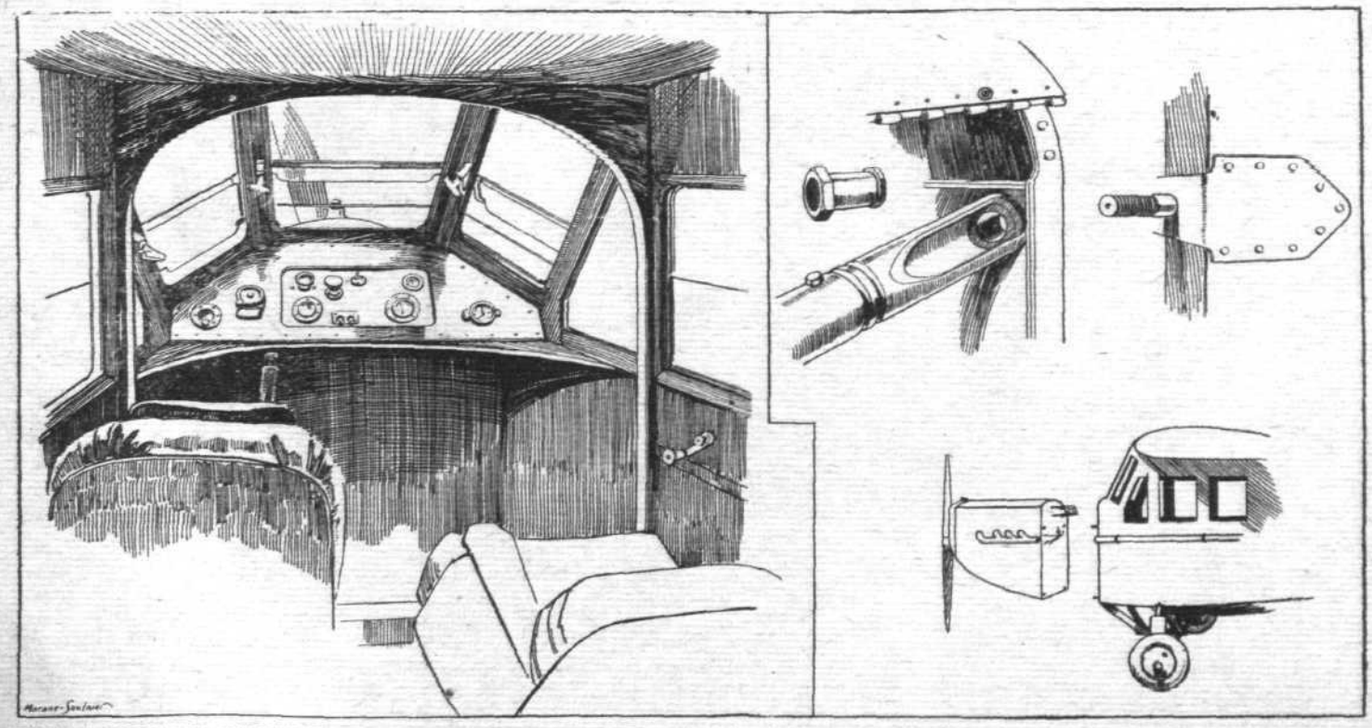
MORANE-SAULNIER : The parasol monoplane was fitted with a Leitner-Watts metal airscrew.

possible increase or decrease in speed, and that he must, therefore, fly to a much larger extent by his instruments than is necessary when he sits in an open cockpit.

A feature of the instrument-board is that sections of it, in the sketch that part which occupies the centre, form a portion of the engine unit and are removed with it. Thus, in the sketch the instruments shown in the central panel are those relating to the engine, such as revs. indicator, thermometer, switches, etc. The throttle quadrant and levers are mounted on a bracket coming through an opening in the front wall of the cabin, below the instrument-board and near the port wall. In the sketch they are hidden by the pilot's seat. A wheel for trimming the tail plane is mounted on the right-hand side of the pilot's seat. A fire extinguisher is placed on the front wall, under the dash.

All the windows in the cabin are arranged to open, the handles of those in front being shown in the sketch. The cabin is entered through a door in the starboard side, and a smaller emergency door is provided in the port side. We should have liked to see some arrangement for an emergency exit in the roof, but as the machine will probably not be called upon to fly over the sea, this feature may not be actually needed.

Constructionally, the Morane-Saulnier A.V. is of interest, in that it is built entirely of wood, and without any sort of wire or cable bracing. The wing, which is of the cantilever type, is of unusual construction, in that there are no spars in the ordinary meaning of the word. In place of the spars there is a rectangular section box, formed of light stringers and covered with plywood. This box extends for something like half of the chord, or approximately over the distance which usually separates the spars of a wing. To the front and back of this box are added rib nose and tail pieces, while above and below the box stringers run parallel with the leading edge, of a depth so proportioned as to bring the rectangular section of the box up to the shape of the wing section. Inside the box are ribs running fore and aft. The outer wing covering is of wood, formed of strips running diagonally. These strips are glued together on moulds, and the thickness at any point of the wing is varied by varying the number of strips superimposed. Thus, near the tips there are three layers, while near the centre there



THE MORANE-SAULNIER CABIN MONOPLANE : On the left a view inside the cabin, showing pilot's seat, instrument-board, etc. The square panel in the centre of the instrument-board contains all the engine instruments, and is removed with the engine unit, of which it forms a permanent part. On the right is shown one of the four bolt attachments which secure the engine unit to the fuselage, while in the bottom corner is shown, diagrammatically, the quick-detachable engine unit, with engine instruments, throttle controls, etc.

are nine layers. When finally glued together, the upper and lower surface covers are slipped over the wing framework, to which they are screwed and glued.

The wing is attached direct to the top of the fuselage by four bolts, and on the top of the wing, near the centre, are four eyebolts by means of which the wing may be lifted off the body. Near the wing tips, on the under side, are eyebolts for pegging down the machine in the open.

The *fuselage* is of a construction similar to that used on de Havilland machines, *i.e.* there are four *longerons* and a number of light struts and diagonals, the whole covered with ply-wood. Thus, there are no bracing wires or panel wires. In section, the *fuselage* is rectangular.

Mention has already been made of the fact that the engine is mounted as a separate and complete unit. Thus, the *fuselage* proper ends in front in a large flat bulkhead, forming the front wall of the cabin. The engine housing similarly finishes, at the back, in a flat bulkhead, and the engine unit is attached to the *fuselage* by four bolts only, in the manner indicated in our sketches. As the engine instruments and controls are part of the engine unit, the only connection which needs breaking on taking off the engine unit is the petrol pipe.

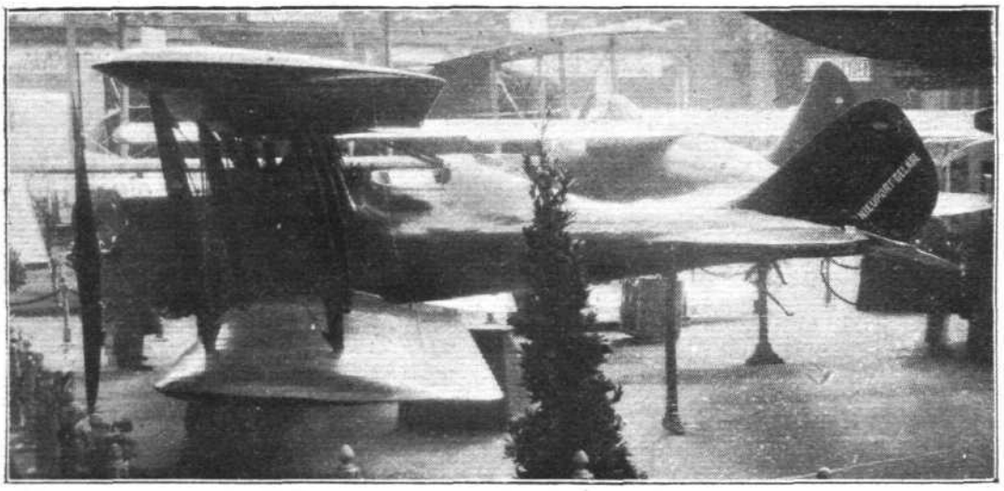
The main petrol tank is slung underneath the floor of the cabin, and is so arranged that in case of emergency it can be slipped instantly, should the pilot consider that a crash was imminent or that the machine might catch fire in the air, the latter a very unlikely contingency, especially in view of the air space left between the engine and *fuselage* bulkheads. Personally, we should prefer to see a couple of petrol tanks mounted in the wing, but in view of the wing construction adopted this might prove difficult for structural reasons. Otherwise, it would appear that direct gravity feed to the engine would be preferable to the force feed actually used. The petrol tank has a capacity of 230 litres (about 50 gallons), which is stated to be sufficient for a flight of approximately 600 miles. It is difficult to see how this quantity of petrol could give such a range.

The undercarriage resembles that of the F.K.26, with the exception that the telescopic "legs" do not go to the side of the *fuselage* but to the lower corner rails. The chassis is of the oleo-pneumatic type, both as regards the main undercarriage and the tail skid.

The main characteristics of the MS. A.V. are as follows: Length, o.a., 9·15 m. (30 ft.); span, 13·62 m. (49 ft. 9 ins.); chord, 2·25 m. (7 ft. 4 ins.); wing area, 31 sq. m. (334 sq. ft.); weight fully loaded (pilot, 3 passengers, 230 litres of petrol, and 20 litres of oil), 1,500 kg. (3,300 lbs.); engine, 180 h.p. Hispano-Suiza; power loading, 18·3 lbs./h.p.; wing loading, 9·85 lbs./sq. ft.; maximum speed, 170 km. (105·5 m.p.h.); minimum speed, 80 km. (50 m.p.h.); ceiling, 4,000 m. (13,000 ft.); range, 1,000 km. (620 miles). It appears to be impossible that the machine should be able to cover 600 miles on 230 litres (50 gals.) of petrol, and presumably this figure refers to flying with one or two passengers, the remaining weight being made up by extra fuel. Throttled down to, say, 150 h.p., the engine would probably consume about nine or ten gallons per hour. Even taking the lower figure, and assuming a cruising speed of about 150 km. (93 m.p.h.), the range would only work out at 515 miles. As a matter of fact, it seems probable that the range is certainly not more than 450–500 miles.

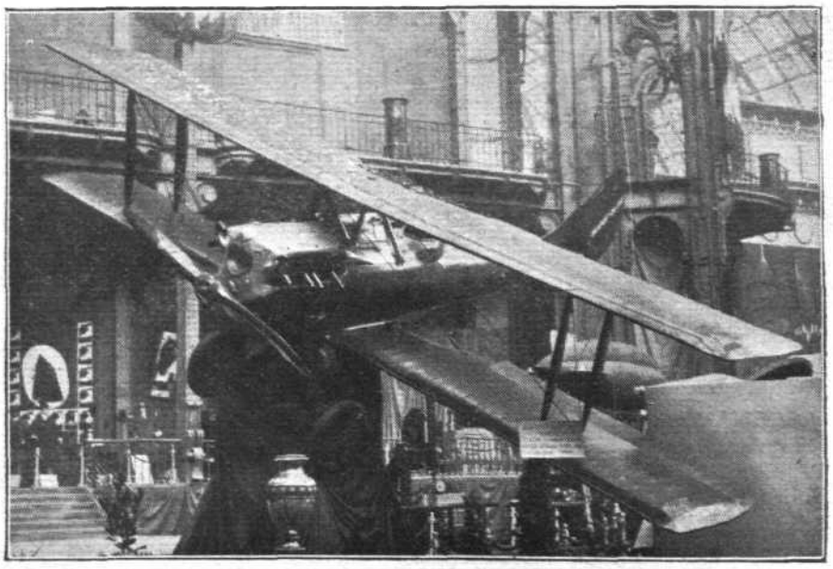
NIEUPORT-ASTRA, Issy-les-Moulineaux

THE Nieuport-Astra firm, the managing director of which is M. Gradis, son-in-law of the late M. Deutsch de la Meurthe, has never troubled itself greatly about commercial aviation, and such few commercial machines as have been produced have scarcely been up to the standard of the Nieuport military and racing machines. It was not, therefore, surprising that at the recent Paris Aero Show all three machines exhibited were of military type. One of these was the well-known 29 C-1, with Hispano engine. This machine, a single-strutter, was, it was stated, designed for work at low altitudes, *i.e.*, its area was small and no supercharger was fitted. The machine is already so well known as to require no description here.

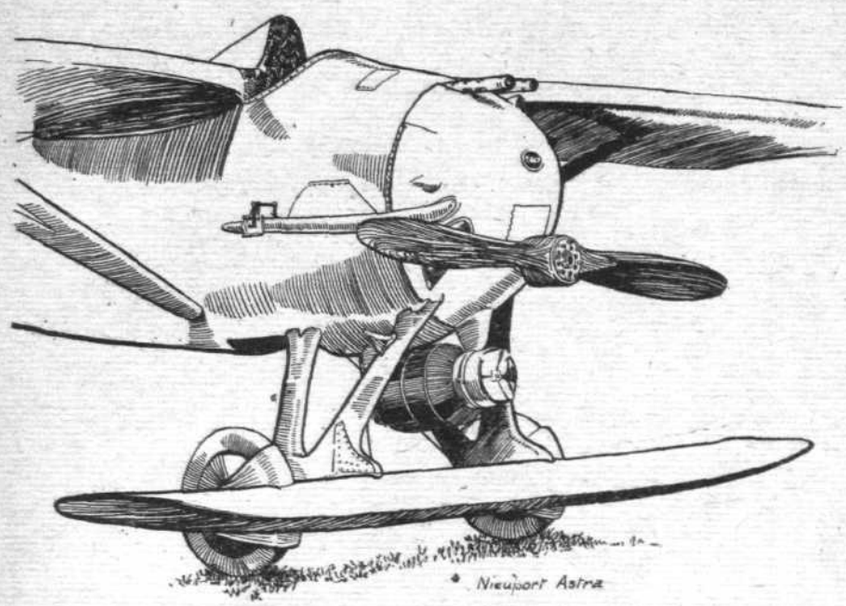


Nieuport-Delage: The 29 C-1, 1923, has two pairs of interplane struts on each side, and a Göttingen wing section.

A modification of the 29 C-1, known as the 29–22 sq. m. type, was shown. In the main this machine, which is intended for work at considerable altitudes, resembles its prototype, but it is fitted with a thick wing-section, and has two pairs of struts on each side. Otherwise it departs but little from the standard type except in a few dimensions. The main characteristics are: Length, 6·50 m. (21 ft. 4 ins.); span, 8 m. (26 ft. 3 ins.); wing area, 22 sq. m. (237 sq. ft.); weight empty, 761 kg. (1,670 lbs.); useful load, 167 kg. (368 lbs.); total loaded weight, 1,100 kg. (2,420 lbs.); power loading, 8·1 lbs./h.p.; wing loading, 10·2 lbs./sq. ft. The calculated speed near ground is 250 km. (155 m.p.h.).



NIEUPORT-DELAGE: This single-strutter biplane chaser is designed for fighting at low altitudes, whereas the two-strutter is intended for fighting at high altitudes.



THE NIEUPORT-DELAGE 37 C-1 : Note the position of the pilot in front of the wing. The auxiliary plane is fitted chiefly to shift the centre of pressure forward.

Of really new type, is the Nieuport 37 C-1, with 300 h.p. Hispano engine. This machine is a "sesquiplan," with thick monoplane wing and a smaller plane enclosing the axle, cross struts and a portion of the wheels. The 37 C-1 is intended for work at great altitudes, and consequently is fitted with a Rateau supercharger. As exhibited, the engine was fitted with an ordinary propeller, but it is understood that later, one of the Levasseur variable pitch airscrews will be fitted so as to draw full advantage of the supercharger.

As regards *fuselage* construction, this machine follows usual Nieuport-Delage practice, the body being a monocoque shell, built up of strips of tulip wood wound round a mould spirally and glued up, the whole being afterwards covered with fabric. This construction has long been in favour by this firm, and certainly it appears to stand up well to hard wear, while rendering possible the excellent streamline shape for which Nieuport machines are famous. The engine is placed very low in the body, the axis of the propeller being considerably below that of the *fuselage*. The result is that the pilot is placed above the engine, which arrangement, in conjunction with the monoplane wing, should give a good view in all directions.

The monoplane wing is built up on four main spars, and is braced by a single V-strut on each side. The covering is in the form of three-ply wood, and there is, consequently, no internal drag bracing, this function being performed by the ply-wood covering. Strong box ribs are placed at the point in the wing where attach the two bracing tube struts, the actual fittings for the struts occurring between the spars. As the pilot's seat is in front of the wing, and with a section which probably has its centre of pressure fairly far back, it might be imagined that the machine would have a tendency to be nose heavy. The wing has been placed as far forward as possible, the leading edge in the centre having been swept back to accommodate the cockpit.

In order that the machine shall not be unduly nose heavy, the fairing surrounding the wheel axle, the cross struts and part of the wheels has been made of lifting section, and is of fairly large area. It is supported on the splayed-out lower portion of the chassis struts, and the wheels are housed in slots cut out of the trailing edge. An aluminium mud guard covers the front portion of the wheels. The arragement is certainly ingenious, and if the machine trims properly (as possibly it may owing to the downwash on the tail from a high-lift main plane) the view should be uncommonly good.

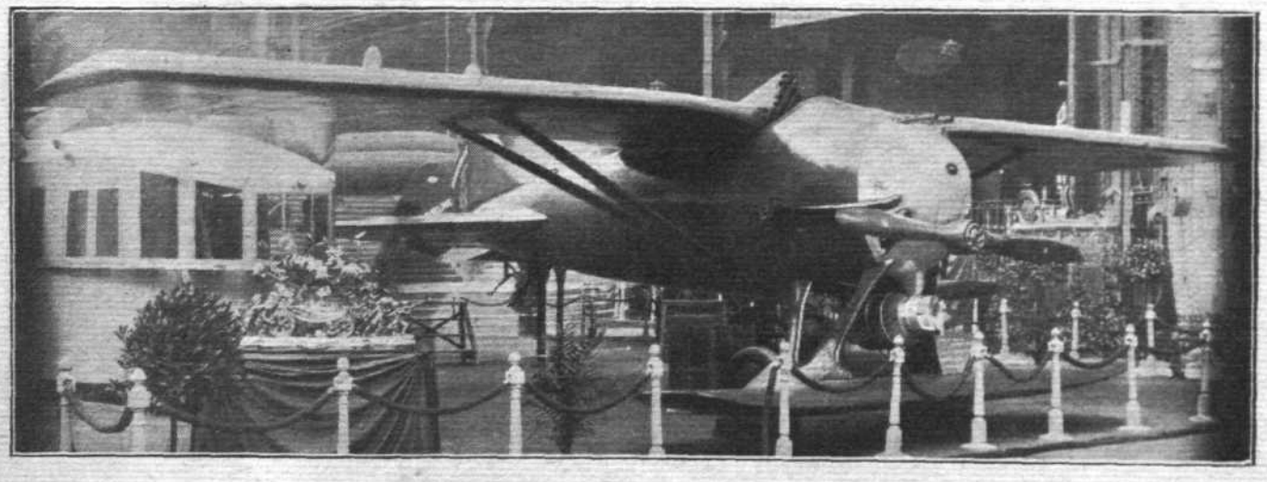
The petrol tank, which has a capacity of 240 litres (53 gallons), is placed in the *fuselage*, behind the pilot. Arrangements are provided so that the tank can be quickly released in case of emergency. The petrol is forced to the engine by A.M. pumps. A single Lamblin radiator is mounted centrally between the front chassis struts. It is provided with a shutter, operated by a small differential gear, which admits air to or shuts it off from the inner portion of the radiator.

The main characteristics of the Nieuport-Delage 37 C-1 are as follows : Length, 7.16 m. (23 ft. 5 ins.) ; span, 11.8 m. (38 ft. 8 ins.) ; chord, 2 m. (6 ft. 7 ins.) ; wing area, 22 sq. m. (237 sq. ft.) ; area of auxiliary plane, 5.02 sq. m. (54 sq. ft.) ; total lifting surface, 291 sq. ft. ; weight empty, 980 kg. (2,160 lbs.) ; useful load, 220 kg. (484 lbs.) ; weight of fuel, 180 kg. (396 lbs.) ; total loaded weight, 1,430 kg. (3,148 lbs.) ; power loading, 10.5 lbs./h.p. ; wing loading (counting both planes), 10.8 lbs./sq. ft. No performance figures are available.

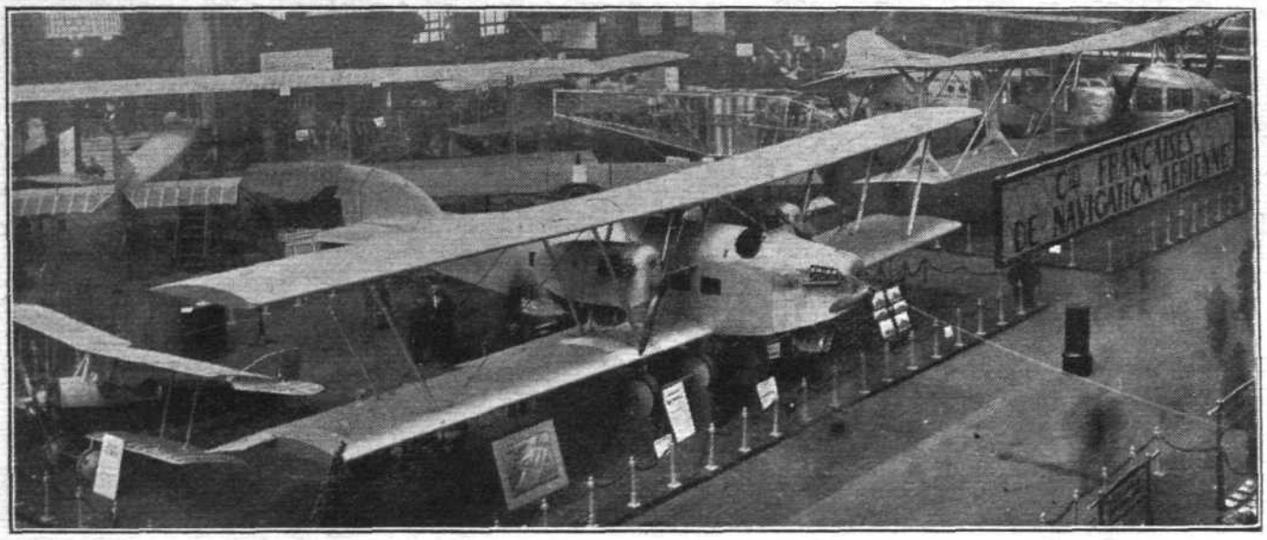
HENRY POTEZ, Levallois-Perret (Seine).

As one of the younger firms of the French aircraft industry, Henry Potez is gradually working towards a prominent position by sheer commonsense design and good workmanship. A number of Potez machines have been in use on the Paris-Prague line, and have, it is believed, given very good results, although not being of the latest type. The military Potez machines have also come to be regarded as sound, reliable aeroplanes, in which there is little in the way of brilliancy, but a great deal in the matter of careful painstaking work.

Three machines were exhibited at Paris, of which one was a two-seater fighter of very usual design, but built almost entirely of metal. As, however, the machine was not, as so many other metal machines, shown in skeleton, it was not possible to find out very much about the detail construction. The machine was of the type XI c.a.p.-2, with Lorraine engine and Rateau supercharger. The front and rear portions



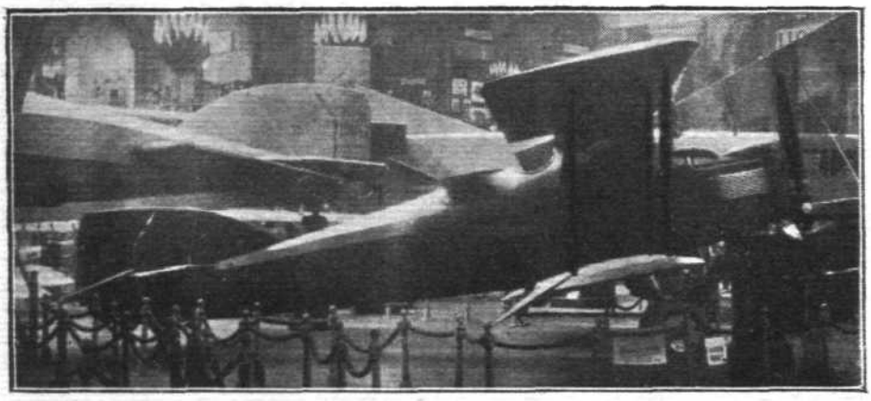
NIEUPORT-DELAGE : The "Sesquiplan" is similar to the racer built for the Coupe Deutsch, and has its wheels mounted in cut-out portions of the small undercarriage plane.



HENRY POTEZ : The three-engined passenger machine is a development of the three-engined biplane exhibited last year.

of the *fuselage* are of metal construction, the rear portion having angle-section *longerons*. The central part is of ordinary wood construction, with ply-wood covering. It is understood that the wings have Duralumin spars of rolled section, but no information is available as regards details.

The characteristics of the Henry Potez XI c.a.p.-2 are as follows : Length, 9·08 m. (29 ft. 10 ins.) ; span, 12·7 m. (41 ft. 8 ins.) ; wing area, 44 sq. m. (474 sq. ft.) ; weight empty, 1,250 kg. (2,750 lbs.) ; weight of fuel, 300 kg. (660 lbs.) ; useful load, 350 kg. (770 lbs.) ; total loaded weight, 1,900 kg. (4,180 lbs.) ; power loading, 11·3 lbs./h.p. ; wing loading, 8·82 lbs./sq. ft. ; speed near ground, 220 km. (136 m.p.h.) ; speed at 4,000 m. (with supercharger), 136 m.p.h. ; ceiling, 8,000 m. (26,300 ft.).



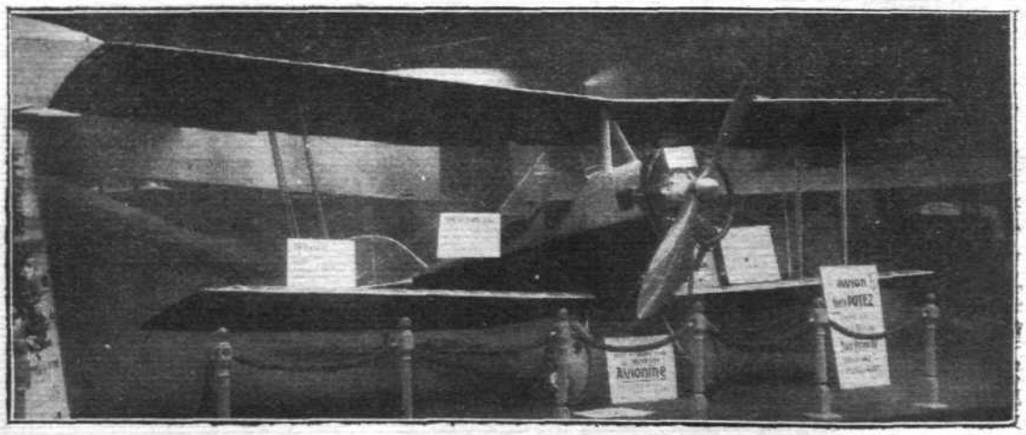
THE HENRY POTEZ FIGHTER : This is a biplane of orthodox design and construction.

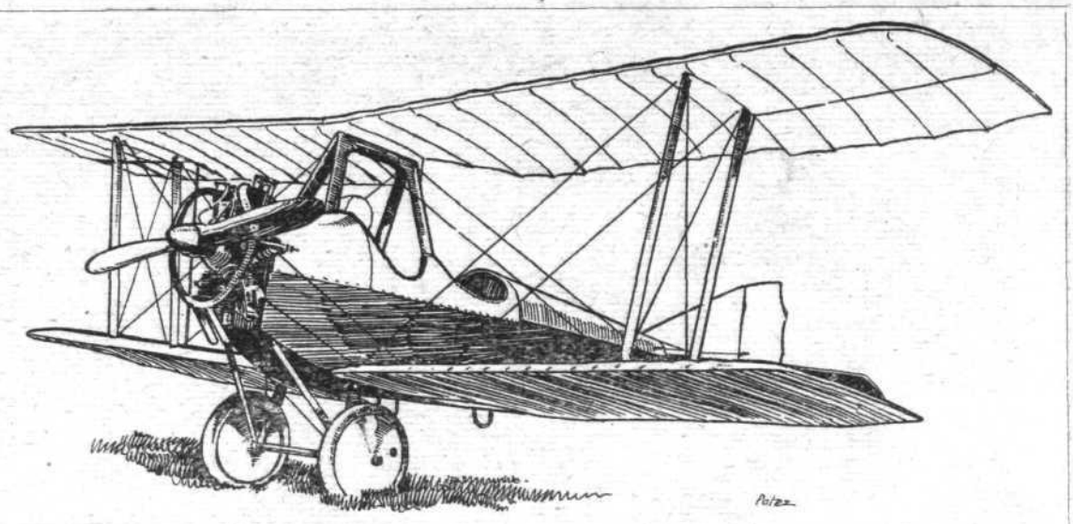
The Henry Potez type XVIII is a three-engined commercial biplane, which is a development of the three-engined machine (type X) shown in 1921. It is fitted with three Lorraine-Dietrich engines of 270 h.p. each, two of which are mounted on V-struts between the wings, while the third is housed in the nose of the *fuselage*. The machine is constructed mainly of wood, the only portions which are made of metal being the engine mountings and *nacelles*, and the tail surfaces. Ply-wood covering is used for the *fuselage* as regards the cabin portion, while the rear part is fabric covered.

The cabin has seating accommodation for 10-12 people, rows of chairs being ranged alongside the walls, with a central passageway between them. Behind the cabin is the W.C. and luggage compartment, while a door in the front of the cabin leads to the pilot's cockpit, placed immediately aft of the central engine. The pilot sits on the port side, and next to him is a seat for an engineer, navigator, or wireless operator.

The wings are of usual construction, separated by one pair of inter-plane struts on each side, in addition to the V-struts carrying the engines. *Ailerons* (of the horn-balanced type) are fitted on the lower plane only. A four-wheeled under-carriage is fitted, two wheels on each side. Each pair of wheels is supported on two Vees, of which the inner runs to the *fuselage* while the outer meets the lower plane at the point where are attached the apices of the V engine struts. The front "legs" of each Vee are in the form of a streamline Duralumin tube, while the rear legs are telescopic and contain the shock absorbers. In the type X a pair of wheels were placed under the nose of the *fuselage* but in the XVIII this pair has been eliminated.

Henry Potez Sports Model : This machine is fitted with a 70 h.p. Anzani engine, and carries pilot and one passenger.

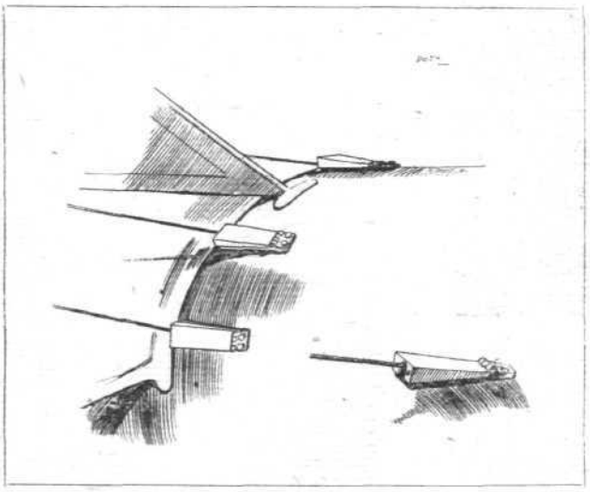




The Henry Potez Type VIII School Machine: The engine is a 70 h.p. Anzani.

Following are the characteristics of the Henry Potez XVIII: Engines, 3 Lorraines of 270 h.p. each; length o.a., 14·8 m. (48 ft. 7 ins.); span, 22 m. (72 ft. 3 ins.); chord, 2·8 m. (9 ft. 2¼ ins.); wing area, 112 sq. m. (1,205 sq. ft.); weight empty, 2,900 kg. (6,380 lbs.); pilot and engineer and instruments, 200 kg. (440 lbs.); fuel for four hours, 675 kg. (1,485 lbs.); useful load, 1,000 kg. (2,200 lbs.); total loaded weight, 4,775 kg. (10,500 lbs.); power loading, 13 lbs./h.p.; wing loading, 8·72 lbs./sq. ft.; speed near ground, 195 km. (121 m.p.h.); speed at 6,000 ft., 190 km. (118 m.p.h.,; ceiling, 5,000 m. (16,400 ft.).

At one of the Paris Aero Shows, a small Potez two-seater was shown which incorporated several interesting features, notably as regards its engine, a 50 h.p. Potez, which was placed on end, with its four cylinders pointing forward.



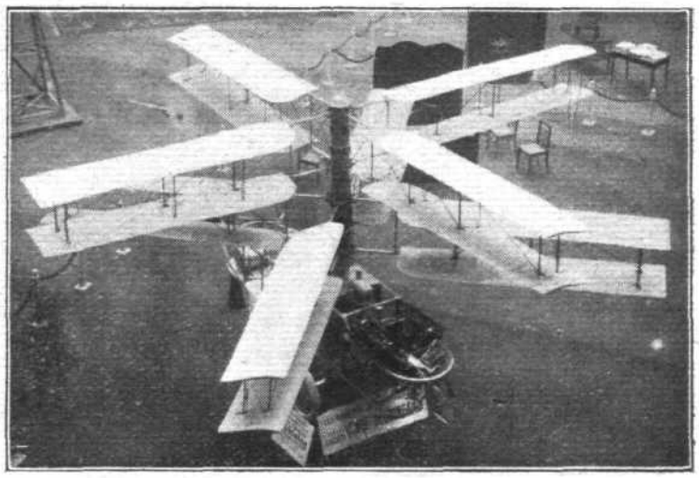
The fibre block cable guides on the Potez VIII are provided with a hinged metal protector.

Nothing came of the idea, it appears, as nothing more has been heard of it, but the arrangement had a good many points to recommend it. Apart from the engine, which entailed a rather unusual installation, the sporting two-seater exhibited recently may be said to be descended from that earlier type, but the power plant is a 70 h.p. Anzani. Known as the type VIII, this machine is of composite construction, with ply-wood covered wood frame *fuselage* and Duralumin wing skeleton and inter-plane struts. The type VIII is of very orthodox design, and is just a plain straightforward machine, in which pilot and passenger, or pupil, sit tandem fashion, the two cockpits being almost one, by the fact that the coaming does not extend across the top. The machine is fitted with dual controls, being particularly suitable for school work.

The main characteristics are: Length o.a., 5·72 m. (18 ft. 9 ins.); span, 8 m. (26 ft. 3 ins.); wing area, 20 sq. m. (215 sq. ft.); weight empty, 240 kg. (530 lbs.); weight of fuel 40 kg. (88 lbs.); useful load, 190 kg. (418 lbs.); total loaded weight, 470 kg. (1,036 lbs.); power loading, 14·8 lb./h.p.; wing loading, 4·8 lb./sq. ft.; speed near ground, 142 km. (88 m.p.h.); climb to 3,000 ft. in 4 mins.; ceiling, 4,000 m. (13,100 ft.).

S.A. PESCARA HELICOPTERACION, Nanterre.

IT is now some considerable time since M. Pescara succeeded in obtaining a grant from the French Government, and he has been busily engaged upon the development of his helicopter. The one shown was, we believe, No. 3, and represented a considerable improvement, from the point of view of construction, on previous experimental models. The general principle of the machine is fairly simple, *i.e.*, two four-bladed screws, one above the other, revolve in opposite directions, driven by bevel gearing from a large central tubular shaft. Each screw is built up as a biplane, with wing-warping type of control. In the present type, the power plant is a Hispano engine of 180 h.p., but so far the machine has not been tested in flight. One of the earlier models, it may be remembered, succeeded in getting off for a short while inside



The Pescara Helicopter, as seen from the gallery.

its hangar, and large photographs on the stand showed the machine about 2 ft. in the air.

We believe that M. Pescara looks upon the present type as a relatively crude affair, and that he has in mind for the finished product a much simpler machine, with two two-bladed screws, one below and one above a streamline *fuselage*, revolving in opposite directions and without the resistance-producing external bracing which characterises the machines hitherto built. Each of these screws will be in the form of cantilever monoplanes.

A few particulars of No. 3 may not be without interest: Engine, 180 h.p. Hispano; diameter of screws, 7.2 m. (23 ft. 7 ins.); total lifting surface, 27 sq. m. (290 sq. ft.); weight of machine empty, 600 kgs. (1,320 lbs.); engine, 270 kgs. (595 lbs.); fuel, 30 kgs. (66 lbs.); useful load, 100 kgs. (220 lbs.); total loaded weight, 1,000 kgs. (2,200 lbs.).

In addition to the complete machine, a single biplane wing or screw blade was shown, in order to demonstrate the principle on which the warp control mechanism works. The angle of incidence of the blades is adjustable, not only for variation in lift, but also during each revolution in order to decrease the angle of the blade moving forward and increase the angle of the blade moving back.

(*To be continued.*)

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

GORDON-BENNETT BALLOON RACE, 1923.

The Aero Club of Belgium, the present holders of the Cup, have intimated that the Gordon-Bennett Balloon Race will take place in Belgium on Sunday September 23, 1923.

The final date for receiving entries is Saturday, March 17, 1923. British entries must be made to the Royal Aero Club, 3, Clifford Street, London, W. 1, accompanied by a remittance of £10 in payment of the entry fee.

SCHNEIDER INTERNATIONAL SEAPLANE RACE

The race will take place in England this year, probably towards the end of August. The selection of the course rests with the Royal Aero Club (the Holders), and their decision will be announced shortly.

The Committee of the Royal Aero Club will select the three competitors to represent the British Empire, and reserves to itself the right to hold eliminating trials.

Entries close on March 1, 1923. Entries are to be made at the Royal Aero Club, 3, Clifford Street, London, W. 1, and must be accompanied by the entry fee, £10.

General Conditions for the Schneider Cup, 1923

Article 1.—Clubs entering machines must deposit, in addition to the entry fee laid down in the General Regulations, a sum of 5,000 francs for each machine, as a guarantee of its being present.

This sum will be returned in respect of each machine that is present at the contest.

Navigability and Watertightness Test

Article 2.—This eliminating test will begin with a navigability test and be followed by a watertightness test. These two tests are intended to establish the seaworthiness of the machine.

Article 3.—Each machine must complete a course of from five to ten nautical miles over the sea, or in a creek, gulf, estuary or bay, as decided by the Commissaires Sportifs.

For this test, the competitor must taxi over the starting line, then rise and continue the course, during which he must taxi the machine over two distances of half a nautical mile at a minimum speed of 12 knots, the limits of each of these distances being indicated by two buoys.

The remainder of the course will be covered in flight.

The competitor must, however, alight again before completing the course and taxi over the finishing line.

The Commissaires Sportifs may allow a competitor who has been unsuccessful in this test to make a second and final attempt.

Article 4.—After having taxied over the finishing line, the machine must be moored immediately to a buoy allotted beforehand, where it must remain afloat for six hours without anyone on board.

Any machine leaving its mooring during this period will be disqualified.

Article 5.—No repairs will be allowed during the navigability and watertightness tests. Except for changing the propeller, which is allowed, the machine must not undergo any modification between the above tests and the speed contest. It will be stamped to ensure this.

Speed Contest

The Jacques Schneider Cup, in 1923, will be contested over a distance of about 200 nautical miles (the course shall not be increased or diminished by more than 10 per cent.).

The closed circuit will be at least five nautical miles.

The contest will take place between July 1 and November 15.

Competitors may be started all together or at intervals, as shall be decided by the Commissaires Sportifs.

If competitors are started at intervals, the order of starting shall be drawn by lot and the hour of starting fixed by the Commissaires Sportifs.

The start may be made either by taxying over the starting line or by passing over it in flight. The finishing line must be crossed in flight.

The course may, if necessary, be taken over the coast, the controls being on land, care being taken to avoid all arrangements likely to impede competitors.

Alightings and repairs are allowed during the contest.

In the event of unfavourable weather, the Commissaires Sportifs may postpone the contest as often as they think fit.

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN, Secretary.

Around the World Flight Attempt Filmed

IN last year's attempt for a flight round the world made by Capt. McMillan, accompanied by Major W. T. Blake, Lieut.-Col. Broome, and, later, Capt. G. H. Malins—when, it will be remembered, a start was made from Croydon on May 24, and the flight brought to a thrilling conclusion on August 23, near Chittagong (India)—a record of their progress was made by means of a cinema camera. It is, we understand, proposed to "release" this film to the public in the near future, and last week we had the opportunity of attending a "private view." We do not propose to describe at length what we saw, for it must be seen to be appreciated, but we have no hesitation in saying that it is a most wonderful record of a fine flight, full of extremely interesting and unique features—such as a "close-up" view of Vesuvius in action, monsoons, dust storms, sunsets, etc., as seen from the machine during flight. Incidentally, also, there are many beautiful and picturesque parts throughout the film. It further demonstrates that this flight, although a failure, was none the less a magnificent achievement, calling for considerable pluck and presenting many hardships. We feel certain that this film will be a great success, for apart from its merits as indicated above, it is well edited, and "written-up"—the "story" is well told without that excess of lengthy inscription which usually flickers off before you have finished reading it.

Rolls-Royce Engines and New Air Services

A NUMBER of new air services in the Colonies are being planned for the present year, in which British-built aeroplanes will be used exclusively, and we are informed that the Rolls-Royce aero engine has been selected in practically every case—on the following routes in particular:—In South Africa, between Cape Town and Johannesburg, calling at Blomfontein (passengers and mails); subsidiary services to Pretoria and Durban; in New Zealand, between Gisburn and Auckland (goods and passengers); in Australia, Geraldston–Derby, Sydney–Brisbane, Sydney–Adelaide, and Charleville–Cloncurry.

Aeronautical Maps

THE Mapping Sub-Commission of the International Commission for Air Navigation held the first of a series of meetings, under the chairmanship of Group Captain L. F. Blandy, Controller of Communications, at the Air Ministry, on the 17th inst. This Commission is considering the general question of the production and form of aeronautical maps, and among the countries represented are France (General Duval and Capt. Roper, Secretary of the Main Commission), Japan, Portugal, and India.

Gold Prospecting from the Air

IN connection with the "big push" for gold in the coming spring at Big Brook River, Labrador, it is of interest to note that one of the prospectors is Mr. A. S. Butler, who is well known to our readers as one of our flying sportsmen. As may naturally be expected, the aeroplane is to form the most important item of his equipment, and will, we have no doubt, be the means of placing him at considerable advantage over the other prospectors, for the question of transport to and around Big Brook River is one of the greatest difficulties to be overcome in this new hunt for gold.

Gothenburg International Aero Exhibition

FURTHER to our previous announcements in connection with the International Aero Exhibition to be held at Gothenburg from July 20 to August 12 this year, we learn that, in addition to the space already taken by French aeroplane firms in the exhibition, the French are going to send a Service squadron to visit Gothenburg during the exhibition, and have also taken 100 sq. m. of floor space for exhibiting purposes in the name of the Under-Secretary of State for Air in France. What is Great Britain going to do?

GLIDING, SOARING AND AIR-SAILING

Those wishing to get in touch with others interested in matters relating to gliding and the construction of gliders are invited to write to the Editor of FLIGHT, *who will be pleased to publish such communications on this page, in order to bring together those who would like to co-operate, either in forming gliding clubs or in private collaboration.*

FROM Capt. F. Warren Merriam we learn that he has been very busy lately erecting sheds for the housing of his gliders, preparatory to opening his gliding school at Whiteley Bank, Isle of Wight. The work of erecting the sheds is now completed, and the first of the machines is ready. This is the monoplane built for the Itford competition, but with various modifications.

* * *

THUS an extra seat has been fitted, and a set of dual controls for school work has been built. Another alteration is that the wing has been raised slightly so as to give pilot and pupil a better view for landing. The seats have been so arranged that the machine can be flown either solo or with a passenger.

* * *

ALREADY Merriam has had a number of enquiries from people wishing to join the Whiteley Bank School of Gliding, among them being Miss Brand, of Edinburgh, who is anxious to become the first lady pupil to learn to pilot a glider.

* * *

APART from the gliding school, Merriam is making arrangements for doing constructional work, and we understand that he is open to consider constructing machines to clients' own designs, and to carry out full-scale experiments on new forms of wings, new wing sections, etc.

* * *

ALTOGETHER, the new gliding school is shaping very well, and it should not be long now before we learn that actual practical instruction has commenced. Merriam has an exceptional record as an instructor in flying power-driven machines, and there is no reason to doubt that he will be equally successful in the matter of teaching flying on gliders. We wish him every success, and hope that during the coming year the Whiteley Bank School of Gliding will prosper as it deserves.

* * *

THE date for commencing attempts on the winning of the Selfridge Prize being January 1 this year, it is now open to anybody to try, and we expect to hear of the first attempts shortly. Several new machines are being built for this competition, while certain existing ones are being modified in the light of the experience at Itford.

* * *

APART from the general interest in pure gliding, several amateurs and one or two aircraft firms are at work on the designs of very light machines fitted with low-power engines. Reference has already been made in these columns to the design on which the de Havilland Aircraft Co. are at work. Recently, we learned of an amateur who is building a small light biplane, which is to be fitted with a Douglas motor-cycle engine. He does not contemplate making very extended flights, but thinks that quite a good deal of fun can be got out of such a machine. So do we.

* * *

LAST week we published under these notes some estimates made by M. Louis Clement relating to the power required for machines of this type. With an average total weight of about 330 lbs, the horse power required is around 3-4 h.p. Allowing for a slightly greater weight and a certain amount of propeller inefficiency, the actual power (as distinct from the thrust-horse power) should not be more than 6-8 h.p. One of the difficulties to be overcome is the lack of a suitable engine, but a good deal might be done with a "faked" motor-cycle engine. The result will not be comparable to the finished product, as fitted with an engine specially designed for the job, but much may be learned in this manner without a great outlay of capital.

* * *

IT would be useful, however, if an assurance could be obtained from the Air Ministry that the airworthiness certificate fee which is the minimum at present (£65) would not be demanded for machines of this type. Otherwise, progress is likely to be severely hampered. We have already called attention to this question in FLIGHT, but would again remind the Air Ministry that it is highest time something was done.

* * *

FOR the benefit of those who may have been under the impression that Thoret's performance of flying for seven hours was a "record," it may be stated that this is not the case, the machine having been fitted with an engine, which at once puts it outside the glider class. It would appear that the time has come for considering the low-power type, say with an engine of a certain maximum power, or better still, with a certain maximum permissible volume. Unfortunately, so little is, at present, known about this type that any restrictions might hamper development.

THE STUTTGART MONOPLANE—1922 TYPE

THE *Flugtechnische Verein* of Stuttgart has been interested in gliding for several years, and at least two complete types have been produced by its students. The second of these, known as the 1922 type, was entered for last year's Rhön competition, but with the spectacular performances of the Hannover machine the flights of the Stuttgart scarcely received the attention it merits. By the courtesy of *Flugsport* we are able to publish this week a brief description of this machine, based upon an article in our German contemporary by Herr P. Brenner, to whom also the drawings and sketches are due.

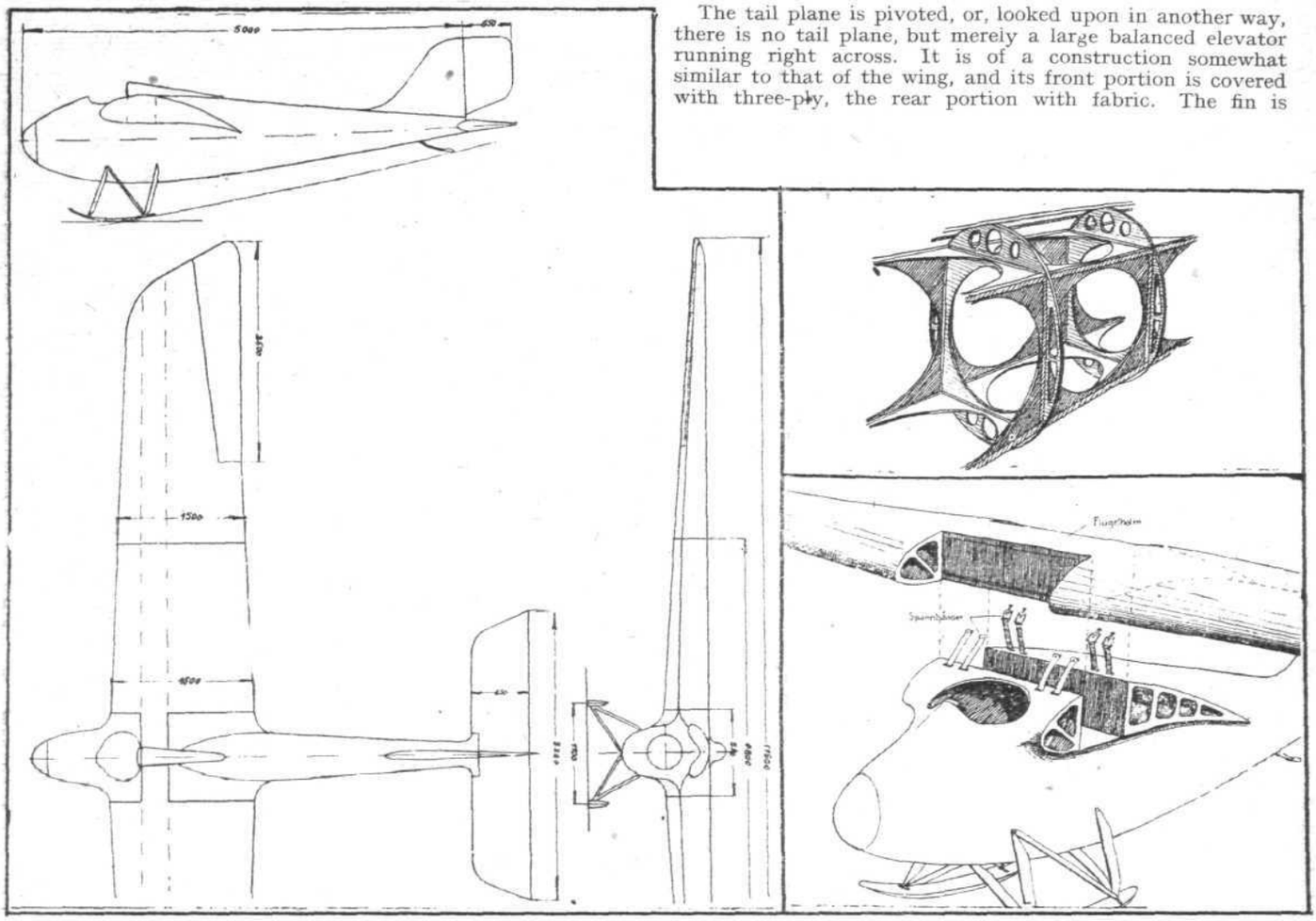
The Stuttgart 1922 type is a cantilever monoplane, in which simplicity of construction has been combined with good aerodynamic properties. The general arrangement drawings, it should be pointed out, somewhat flatter the actual machine, inasmuch as they show a monocoque *fuselage*, whereas, in point of fact, the outer form is polygonal. Nevertheless, the machine is of very pleasing appearance, and shows a rather greater length between trailing edge and tail planes than do the majority of German gliders. That this fact has been instrumental in a considerable degree in making the machine answer her controls better is scarcely to be doubted.

Aerodynamically, the cantilever monoplane wing is characterised by a very pronounced taper in thickness and a somewhat more gradual diminution in chord from root to tip. In order to facilitate transport, the wing is built in three sections, of which the centre portion has a span of 4·8 m. (15 ft. 9 ins.). The chord near the fuselage is 1·6 m. (5 ft. 3 ins.) and at the joint 1·5 m. (4 ft. 11 ins.). The wing section is Göttingen No. 441.

Constructionally, the wing is interesting, chiefly on account of the fact that a single spar is used This is in the form of a box, of approximately square section in the centre, tapering off to a rectangular section at the tips. This form of construction must have simplified the wing construction very considerably, as the box spar is not tapered in plan, and consequently the ribs could be cut out, leaving an opening in them of constant width, varying in depth only, according to the depth of the rib itself. The box spar is covered with three-ply, and it is stated that under the most unfavourable conditions (during a steep dive) the factor of safety has been found to be 5. It is thought that, actually, it is greater, owing to the fact that the front portion of the wing is covered with thin three-ply, which may be regarded as a D-section tube and which would considerably strengthen the wing, although it was not taken into account when calculating the factor of safety.

The two end pieces are attached to the centre-section by simple metal straps, and the centre-section itself is of somewhat unusual arrangement, in that only the box spar runs across the fuselage, the leading and trailing edges being cut away, and their place taken by a permanently built-up structure which forms part of the fuselage. The accompanying sketch will make clear the arrangement. The manner of attaching the wing to the fuselage is extremely interesting, and it would be difficult to imagine a simpler attachment. Four flat steel straps pass over the wing, and are secured by four buckles of the type used for fastening down magnetos.

It will be seen that if the wing is a reasonably good fit in the root on the fuselage, the straps need only hold down the wing, which is located laterally and fore-and-aft by the shape of the cut-out portions and their counterparts on the body.



The tail plane is pivoted, or, looked upon in another way, there is no tail plane, but merely a large balanced elevator running right across. It is of a construction somewhat similar to that of the wing, and its front portion is covered with three-ply, the rear portion with fabric. The fin is

THE STUTTGART MONOPLANE GLIDER: On the left, general arrangement drawings. On the right, above, sketch of fuselage construction; below, a perspective sketch showing manner in which wing is located on fuselage.

The fuselage construction is indicated in a sketch. It was desired to make the work of building it as simple as possible, and consequently, monocoque construction was discarded in favour of a simpler method. The main framework consists of four longerons, to which are attached rectangular panels with elliptical holes cut in them. It is argued that, although this form does not give as great rigidity as would one in which triangular pieces had been cut out, leaving diagonal strips running from corner to corner, it has the advantage of giving considerable flexibility, which, it is thought, virtually makes the fuselage stronger against shocks. This is, of course, due to the fact that the panels are braced by the roughly triangular pieces left in the corners. The final shape is attained by tacking stringers to the edges of the oval formers, and covering the whole with fabric.

built as an integral part of the fuselage, and the rudder, as well as the ailerons, is of aluminium, covered with fabric.

The undercarriage is of the twin-skid type, braced laterally and fore-and-aft by diagonal struts.

The pilot sits in front of the wing, and a fairing, which is also intended to protect him in case the machine turns over, is fitted behind his head. The controls are of usual type.

In spite of the fact that the machine was so designed that it could be built by amateurs out of standard materials, the weight has not worked out unduly heavy, the machine weighing 176 lbs. empty. The span is 11·6 m. (38 ft.), and the wing area is approximately 180 sq. ft. Assuming a weight of 150 lbs. for the pilot, the wing loading becomes 1·8 lbs./sq. ft.

Congratulations for the Duke of York

CONGRATULATIONS on the betrothal of the Duke of York, Group Captain, R.A.F., have been sent by the following:— From the Secretary of the Air Council: "The Air Council desire to offer your Royal Highness the warmest congratulations on your engagement." From Sir Hugh M. Trenchard, Chief of the Air Staff: "On behalf of all officers and airmen of the Royal Air Force, I am desired to convey to your Royal Highness their most sincere and loyal congratulations on the occasion of your betrothal"

A Correction

UNDER the stress of getting out a specially large number in a very short time, it is almost impossible that mistakes should be entirely eliminated, and it appears that we have not altogether escaped in producing our special number dealing with the British Aircraft Industry (December 14, 1922). Thus a little slip has occurred by which, in dealing with the Bristol Aeroplane Co., Ltd., we referred to Sir Henry White-Smith as managing director of the firm. This is, of course, incorrect, Sir Henry being a director and secretary of the company. The managing director is, of course, Sir G. Stanley White, Bart., son of the late Sir George White, Bart. In order to set all doubts at rest, it may not be amiss to state definitely how the board of directors of the Bristol Aeroplane Co. is composed: The chairman is Mr. Samuel White, J.P., and managing director, Sir G. Stanley White, Bart. Sir Henry White-Smith is a director and secretary, while Mr. H. J. Thomas is works manager. This should, we think, make the position quite clear.

No British Aeroplanes brought down in Iraq

THE Air Ministry announces that in reference to the Kemalist *communiqué* circulated by Reuter on January 15, the Air Council have received a telegram from the Air Officer Commanding, Iraq, stating that the report that British machines bombing near Mosul have been brought down is entirely without foundation.

LONDON TERMINAL AERODROME

Monday evening, January 22

I UNDERSTAND that there is a great deal of truth in the newspaper reports as to the enlargement and improvement of the air station. In fact, as the scheme now stands, it is probable that, if negotiations for the extra land are satisfactory, the area of the aerodrome will be doubled. The scheme is very ambitious, and calls for the diversion of Plough Lane, but, doubtless even failing this, a modified scheme will be put into operation. There is no doubt that the present aerodrome will be too small to deal adequately with the traffic this coming season, and that some arrangements will have to be made to avoid the delay which will occur if increased traffic is attempted with the present accommodation.

The experimental night service between London and Paris is due to begin on February 5, and, on that same day, the members of the Air Conference will pay their annual visit to the aerodrome. I understand that arrangements will be made for those who wish to see the start of this experimental night service to remain at the aerodrome, and it is probable that, instead of the visit being made in the morning, as hitherto, it will be postponed until the afternoon in order that this may be arranged with the least inconvenience to the visitors.

A New Aerodrome Light

DURING the week, some night-flying experiments have been carried out with an R.A.F. Bristol fighter, and a light which is new to Croydon was tried out. This was one of the aerodrome location flares used in the War, but with later improvements. Judging from a ground point of view, it appeared very effective. The aerodrome view, from a mile away, was as light as day, and it was possible even at this distance, to pick out individual objects on the 'drome, such as windows of buildings, and figures of people moving about. Various experiments were made with the existing lights—landings being made with a number of individual lighting effects, the idea being evidently to test all the illuminations before the start of the night service on February 5.

The all-metal Junkers monoplane got away on Tuesday, and as the aerodrome at Gelsenkirchen was, by then, in the hands of the French, it made for Berlin. It was hoped to make a non-stop flight, but the speed of the machine was all against this, and after taking three hours and eight minutes to reach Rotterdam, it descended there for the night. It is interesting to note that one of the Daimler 34's, flying on the same route, but in the opposite direction, was only two hours eight minutes in covering the same distance—the wind, if anything, being even then in favour of the German.

On Saturday afternoon, one of the Fokker monoplanes flying from Rotterdam to Croydon, alighted safely on the aerodrome, and was then caught by the strong northerly wind before the men with the wing-hooks could reach it. After going over, first on to one wing and then the other, it finally turned right over on to its back. The pilot was unhurt, but of the two passengers one was cut about the face, while the other suffered from bumps to his head. After treatment by the first-aid man, however, they were able to proceed on their journey, catching a train the same evening from Euston to the north. The machine will probably have to be written off, owing to the fact that its single wooden wing was damaged, and there are no spares in England. This is especially unfortunate, as the machine was fitted with the new Rolls-Royce "Eagle nine," and this was its first trip with this engine.

"G-EBBS"—Still Going Strong

THE Daimler Airway have re-painted their record-breaking "34 G-EBBS," which has now flown considerably over 100,000 miles, and the machine is now as good as new, both in appearance and performance. In fact, the Daimler people always use this machine to try out anything new, having been testing a new design of three-blader "prop." on it only this week, and loading it up to a limit.

I understand that the Daimler Co. have been invited to send a representative to the next meeting of the International Air Traffic Association at Wiesbaden on January 29. It will be remembered that this Association was formed, at the instigation of Mr. Holt Thomas, by the old "Airco" Company, and that Maj.-Gen. Sir W. S. Brancker took the chair at its first meeting. Since the "Airco" became defunct, no British firm has been a member, although the Germans have joined, and now it is possible that Britain will once more be represented on the Association.

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FLYING BOATS

MAJOR J. D. RENNIE, on January 18, 1923, read certain sections of a paper which he had written before the Royal Aeronautical Society. The title of the paper was "Some Notes on the Design, Construction and Operation of Flying Boats." The paper proved one of considerable interest, and, incidentally, the lecturer came in for a fair amount of criticism on certain points raised and statements made. Professor Bairstow was in the chair, and in introducing the lecturer said he was glad to see that Major Rennie had prepared a very long paper. There seemed to be an idea that lecturers had to keep their papers short so that they could be read and discussed in the time available. This was not, he said, the case, as the papers were published in the Journal of the Society, and written contributions to the discussion would also be accepted for publication. He was also pleased to note that the paper contained certain challenges to outside designers, and brought up the question of private design as against Air Ministry design. He then called upon Major Rennie to read his paper.

Major Rennie confined himself to reading certain sections of the paper, and showed a number of slides illustrating flying boats, mainly of the F. type. He paid a warm tribute to the late Commander Porte, to whom most of the credit for the Felixstowe flying boats was, he said, due. He also made the statement that as a result of 99 per cent. of the designing of flying boats being done at Felixstowe, private firms had not the opportunity of getting the necessary practical experience, and that flying boats produced by private firms during and after the War had been unsuccessful and in several cases complete failures. From this introduction it might be expected that the paper would mainly be an attempt to put on record the results of the experience in flying boat design and construction obtained at Felixstowe. This proved to be the case, and as Major Rennie was Chief Technical Officer under the late Commander Porte, he would naturally be well acquainted with the work done there.

With the body of the paper we have not the space to deal. If published in full, it would occupy about twelve pages in FLIGHT, without the illustrations. On the other hand, the paper does not readily lend itself to publishing in abbreviated form, and we would recommend those of our readers who are interested in the subject to obtain a copy of the Journal of the R.Ae.S., in which both the paper and the discussion thereof will be published in full. A few points from the discussion may, however, be of interest.

Mr. G. S. Baker, of the N.P.L., pointed out that it was not until after the "Fury" was built that the N.P.L. was asked to carry out tank tests on a model, and that from these it was predicted that the machine would porpoise at 27 knots. This actually proved to be the case. He also pointed out that the N.P.L. people were not responsible for the lines of this hull.

The author had made comparisons between the F type and the Linton-Hope type of hull. In his opinion there was no comparison, the Linton-Hope hulls being far superior, and very scientifically designed. Incidentally, he pointed out, Linton-Hope had much to do with improvements to the F type of hulls. On the question of "elasticity," Mr. Baker thought the real difference lay in the fact that, whereas in the F type the frames and stringers were spaced fairly far apart, with relatively large unsupported areas in between, in the Linton-Hope type the size of the unsupported panels had been reduced to a minimum. The accidents to the F types were, he thought, due to the "panting" of these large unsupported areas.

Capt. D. Nicolson put in a good word for the Naval Architect, pointing out that most of the difficulties upon which the lecturer had laid stress were not difficulties at all to a man trained in naval architecture. With reference to the lecturer's statement that several privately-designed flying boats had been complete failures he would like to know what they were, as he personally knew of one only. Concerning

a number of the improvements in the F type of boat, Capt. Nicolson said these were not due to Felixstowe at all, but to the Air Ministry, he himself having designed several.

Mr. W. O. Manning joined with Capt. Nicolson in wishing to know which boats had been failures. He believed the lecturer would find that during the last two years several very successful boats had been produced by private firms. He challenged several of the figures for percentage weights given by the lecturer, and stated that the figures attributed to the F5 were not representative of the standard type, but referred to a special type of F5 built at Felixstowe, and that this had to be considerably strengthened to make it fit for general service. Comparing the standard type of F5 with one of the Linton-Hope type of approximately the same size, the P5, the structure weight of the standard F5 was 47 per cent., and of the P5 35·8 per cent. The useful load of the P5 was 39·3 per cent., and of the standard F5 30 per cent. Also, the speed of the Linton-Hope type of machine was about 13 or 14 knots higher than that of the standard F5 with full load. He pointed out that the great superiority of the P5 was largely due to the Linton-Hope type of hull.

The lecturer had given a description of the complicated elevator movements necessary to get an F boat off the water. With the Linton-Hope type of hull, as developed by Mr. Baker in the tank at the N.P.L., none of these movements were necessary, as such a machine could be started from rest and flown off without using the elevators. Major Rennie had stated that the Linton-Hope hulls had three-ply formers in the bottom. He would point out that the use of three-ply in such a position had been obsolete for several years, and that recent hulls had no three-ply in their construction at all.

Several others took part in the discussion, but in the main the points raised were similar to those brought forward by previous speakers. Altogether, it appeared that the general consensus of opinion was that, although they had done extremely good work during the War, the F type of boat could not compare with the Linton-Hope type, and that this applied both to strength of construction for structure weight, ease of getting off, seaworthiness, and lower resistance when in the air. No doubt further contributions to the discussion will be sent in, and we again recommend all interested in the subject of flying boats to obtain copies of forthcoming issues of the Journal containing the paper in full and the ensuing discussion.

THE ROYAL AIR FORCE

London Gazette, January 16, 1923

General Duties Branch

Flying Offr. R. Harrison, D.F.C., is granted a permanent commn. in rank stated; Oct. 24, 1919 (since promoted). *Gazette,* Oct. 24, 1919, appointing him to short service commn, is cancelled.

The follg. are granted short service commns., in ranks stated, with effect from, and with seny. of, dates indicated :—Flying Offr. C. P. Wingfield; Jan. 2.

Pilot Offrs. on Prob. (Jan. 1).—V. M. Callen, G. Coffin, R. T. Halliwell, C. F. Roupell.

Lieut. J. Dunn, R.G.A., is granted temp. commn. as Flying Offr. on seconding for four years' duty with R.A.F.; Dec. 19, 1922. Pilot Offr. G. A. F. Bucknall to be Flying Offr.; June 30, 1922. Flight Lieut. R. Ha ley, D.F.C., A.F.C., is restd. to full pay from half-pay; Jan. 15. Flying Offr. (Hon. Flight Lieut.) W. A. Elliot (Lieut., R.N.) relinquishes his temp. commn. on retirement from R.N.; Nov. 9, 1922. Flight Lieut. (Hon. Sqdn. Ldr.) A. Richard (Lieut.-Comdr., R.N.) relinquishes his temp. commn. on return to Naval duty; Jan. 15. Flying Offr. F. C. Farrington, M.C. (Lieut., R.F.A.), relinquishes his temp. commn. on return to Army duty; Jan. 2. *Gazettes,* Dec. 26, 1922, concerning Flights Lieuts. A. Hunter, O.B.E., and C. P. O. Bartlett, D.S.C., are cancelled.

Stores Branch

Flying Offr. C. L. P. Mullany is granted a short service commn. in rank stated for accountant duties; Dec. 19, 1922. His name will be placed on gradation list immediately below that of Flying Offr. F. J. S. Short.

The follg. Flying Offrs. are transfd. to the Stores Branch (Dec. 15, 1922) :—E. G. Keeping J. J. Ironmonger.

Reserve of Air Force Officers

Flying Offr. W. J. Sivewright is transfd. from Class A to Class C; Jan. 16.

Nursing Service

The follg. are confirmed in their appts. as Staff Nurses :—Miss. D. Blomfield; Jan. 18, 1922. Miss D. V. Mansell, Miss D. E. Malle t, Miss E. D. L. Graham; July 3, 1922.

Memoranda

Flying Offr. C. L. P. Mullany relinquishes actg. rank of Flight Lieut.; Dec. 19, 1922. Lieut. F. C. Troup is deprived of permission to retain rank of Lieut. on conviction by the Civil Power; Dec. 18, 1922.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

Wing Commander : F. E. T. Hewlett, D.S.O., O.B.E., from Half-pay List to Headquarters, Coastal Area. 10.1.23.

Flight Lieutenants : H. C. Todd, from R.A.F. Depot (Inland Area) to No. 2 Squadron (Inland Area). 15.1.23. T. O. Clogstoun, from R.A.F. Depot (Inland Area) to No. 100 Squadron (Inland Area). For duty as Adjutant. 12.1.23. L. M. Iles, A.F.C., from No. 5 Flying Training School (Inland Area) to No. 7 Group Headquarters (Inland Area). 19.1.23. D. Craik, D.F.C., from R.A.F. Depot (Inland Area) to No. 1 Group Headquarters (Inland Area). 12.1.23. P. A. Hall, M.B., B.A., from No. 45 Squadron (Iraq Command) to Station Commandant (Iraq Command). 2.12.22. P. C. Livingston, D.P.H., from R.A.F. Depot (Inland Area) to R.A.F. Central Hospital (Coastal Area). 8.1.23. P. J. Flood, from Headquarters, Iraq Command, to Baghdad Combined Hospital (Iraq Command). 5.11.22. H. B. Troup, from Headquarters, Iraq Command to Baghdad Combined Hospital (Iraq Command. 5.11.22. A. Briscoe, M.B., from No. 55 Squadron (Iraq Command) to Basrah Combined Hospital (Iraq Command). 3.12.22. A. C. Ransford, from Headquarters, Iraq Command, to Station Commandant (Iraq Command). 5.11.22. D. Le Bas, from Headquarters, Iraq Command, to Baghdad Combined Hospital (Iraq Command). 5.11.22. J. C. T. Fiddes, M.B., from Aircraft Depot (Iraq Command) to Station Commandant (Iraq Command). 16.11.22. J. B. Woodrow, from Headquarters, Iraq Command, to Baghdad Combined Hospital (Iraq Command). 5.11.22. J. M. A. Costello, M.C., M.B., M.S.c., from Headquarters, Iraq Command to Basrah, Combined Hospital (Iraq Command). 12.11.22. W. D. Miller, M.B., from Headquarters, Iraq Command, to Station Commandant (Iraq Command). 5.11.22. J. G. F. Heal, M.D., from Research Laboratory and Medical Officers' School of Instruction (Coastal Area) to R.A.F. Hospital, Cranwell. 10.1.23. E. F. N. Currey, from Research Laboratory and Medical Officers' School of Instruction (Coastal Area) to R.A.F. Depot (Inland Area). 10.1.23. T. J. West, M.C., from No. 1 School of Technical Training (Boys) (Halton) to Aeroplane Experimental Establishment (Coastal Area) (Supernumerary). 1.2.23. A. P. Ledger, M.B.E., from No. 4 Flying Training School (Middle East) to R.A.F. Depot (Inland Area) (Supernumerary). 16.12.22. H. E. F. Wyncoll, O.B.E., M.C., from Headquarters, R.A.F. India, to No. 70 Squadron (Iraq Command). 1.12.22. L.A.K. Butt, from No. 4 Flying Training School (Middle East) to C. and M. Party, Moascar (Middle East). 26.9.22. L. A. K. Butt, from C. and M. Party, Moascar (Middle East) to No. 1 Armoured Car Company (Palestine Command). For duty as Adjutant. 11.12.22. The notification which appeared in R.A.F. Bulletin No. 84, dated 1.11.22., wherein this Officer was posted from No. 4 Flying Training School to No. 208 Squadron, with effect from 26.9.22, is hereby cancelled. C. F. Horsley, M.C., from Headquarters, Iraq Command, to Basrah Group Headquarters (Iraq Command). 5.12.22. A. C. Randall, D.F.C., from R.A.F. Depot (Inland Area), to Inland Area Aircraft Depot. For duty as Adjutant. 6.1.23. G. H. Reid, D.F.C., from R.A.F. Depot (Inland Area) to No. 1 Group Headquarters (Inland Area). 12.1.23. D. Craik, D.F.C. The notification concerning this officer which appeared in R.A.F. Bulletin No. 99, dated 15.1.23, is hereby cancelled. A. C. Collier, from No. 24 Squadron (Inland Area) to Air Ministry (Dept. of C.A.S.) (D.O.I.). 15.1.23. The notification concerning this officer which appeared in R.A.F. Bulletin No. 94, dated 20.12.22, is hereby cancelled. F. J. Cooke, from R.A.F. Depot (Inland Area) to No. 1 School of Technical Training (Boys) (Halton). 19.1.23. C. Y. Roberts, from Aeroplane Experimental Establishment (Coastal Area) to Headquarters, R.A.F., India (Supernumerary). 6.1.23. R. J. Sanceau, from No. 1 Group Headquarters (Inland Area) to Air Ministry (Dept. of A.M.P.). 1.1.23. Substituted for the notification concerning this Officer which appeared in R.A.F. Bulletin No. 94, dated 20. 12.22. D. Gilley, D.F.C., from No. 2 Squadron (Inland Area) to R.A.F. Staff College (Inland Area). For duty as Adjutant. 26.1.23. (Honorary Squadron Leader) H. B. B. Greene, from School of Naval Co-operation and Aerial Navigation (Coastal Area) to Aeroplane Experimental Establishment (Coastal Area). 12.1.23. M. J. Cahalane, M.B., from Aeroplane Experimental Establishment (Coastal Area) to R.A.F. Base, Gosport (Coastal Area). 14.1.23.

Mr. Cowley at the I.Ae.E.

TOMORROW, January 26, Mr. W. L. Cowley of the N.P.L. will read before the Institute of Aeronautical Engineers a paper entitled "The Wind Tunnel Work at the N.P.L." In view of the tremendously large proportion of our present knowledge which is due to extensive wind tunnel tests on models, a thorough understanding of the manner in which the tests are conducted, the measuring apparatus used, etc., is of great importance to the aeronautical engineer. One of the difficulties of the past has been to get together the practical engineers and the research workers, and it is to be feared that there has not always been, between the two, that mutual understanding and respect which is essential to sound progress. Lectures such as this should do much to break down prejudice and assist in better co-operation. We, therefore, advise all who can possibly do so, to be present at this lecture, which takes place at 6.30 p.m. at the Engineers' Club, Coventry Street.

PERSONALS

Married

ARCHIBALD BUCHANAN YUILLE, D.F.C., elder son of Mr. and Mrs. Herbert Buchanan Yuille, of Northwood, Middlesex, was married on January 18 at Holy Trinity Church, Brompton, to Miss CECILIA FRANCES SILVERWOOD COPE, daughter of Mr. and Mrs. William Silverwood Cope, of 24, Collingham Gardens.

To be Married

The engagement is announced of JOHN REGINALD CASSIDY, Flight Lieut., R.A.F., youngest son of Mrs. F. Cassidy, of Dalby, Queensland, Australia, to BARBARA MARGARET, elder daughter of H. R. DREW and Mrs. DREW, of Margery Wood, Reigate.

Death

The death is announced of LADY SALMOND, wife of Major-General Sir William Salmond, K.C.B., and mother of Air Vice-Marshals Sir Geoffrey and Sir John Maitland Salmond, and of Lady Wauchope, wife of Sir John Douglas Don Wauchope, Bt. She was the youngest daughter of W. F. Hoyle, of Hooton Levet Hall, Maltby, Yorkshire.

Item

Lieut. Aviateur Chevalier WILLY COPPENS, Air Attaché to the Belgian Embassy has left for Brussels, and will be away from London for about a month.

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SOCIETY OF MODEL AERONAUTICAL ENGINEERS

(London Aero-Models Association)

DR. THURSTON'S lecture was attended by a considerable number of members, who were greatly interested. His lecture, illustrated by lantern slides (a number of which were shown for the first time), showed the progress made in aeronautics during the past thirty years, which proved to all the results that can be achieved by research work with the assistance of models. A hearty vote of thanks was proposed by the Chairman, Mr. F. de P. Green, which was enthusiastically carried.

On Saturday last, a Sub-Committee met to draw up a programme for the coming season, and made good progress, and hope to report at the Committee Meeting, to be held on Friday, February 2, 1923.

Mr. B. K. Johnson has recently been busy preparing drawings of models made by various London members, and it is hoped to have same published from time to time in FLIGHT, the official organ of the Society, for the benefit of country members.

Meetings are held at Headquarters, 20, Great Windmill tSreet, Piccadilly, W. 1, every Friday at 7.30 p.m.

Full particulars of the Society can be obtained from the Hon. Secretary A. E. Jones, 48, Narcissus Road, West Hampstead, N.W. 6.

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A Display of Aero-Stamps and Covers

AN extremely interesting, instructive and enjoyable evening was spent on the 16th inst. in connection with the Annual General Meeting of the Herts Philatelic Society, when Mr. Harold L. Hayman displayed his collection of aero stamps and covers. These included philatelic records of practically every known occasion when mails have been carried by air, from the Balloon Post of the 1870 Siege of Paris to the present-day air mail services. Most of the specimens were "covers" actually flown on each particular occasion, and were in remarkably fine condition, being clearly post-marked and indicating undoubted genuineness. Amongst the most interesting specimens, may be mentioned the following:—First United Kingdom air mail, London–Windsor and Windsor–London, 1911; First Indian air mail (Capt. Windham), 1911; various German semi-official aeroplane and airship services, 1911-13; first Colombian air mail, 1919; first Chinese air mail, 1920; Trans-Atlantic, Hawker, Alcock and R.34; London–Australia (Ross-Smith); Cairo-Baghdad (various); Siam, Syria, etc. In addition to the actual covers—only a certain number of which bore special air-post stamps—separate specimens, including varieties and errors, of air-post stamps issued by different countries were displayed. It was, indeed, a truly remarkable collection, we should think one of, if not *the*, most complete collections of its kind in existence. As Maj.-Gen. Sir Sefton Brancker, who was present on this occasion, remarked after the display, it recorded the development of the carrying of mails by air in a graphic and interesting manner. Gen. Brancker also made a few remarks on the position of commercial aviation, and especially the possibilities of the air transport of mails.

Air Mail Stamps and Correspondence

THE Editor of FLIGHT invites correspondents throughout the world to send him letters (addressed to 36, Great Queen Street, Kingsway, London) by their national or local air mails. These will have special and personal acknowledgment in the Editorial columns of FLIGHT, and help to encourage the more general use of the air for mail carrying. The Editor would also greatly appreciate any items of interest or news relating to air mail services and air stamps.

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PUBLICATIONS RECEIVED

Department of Overseas Trade. Report on the Economic and Financial Conditions in Paraguay, September, 1922. By F. W. Paris. H.M. Stationery Office, Kingsway, W.C. 2. Price 6*d.* net. By post, 7*d.*

Rendiconti dell' Istituto Sperimentale Aeronautico. 14, *December,* 1922. Libreria di Scienze e Lettere, Piazza Madama, 19–20, Rome.

Extract from Select Committee Report on Training and Employment of Disabled Ex-Service Men H.C. 170. H.M Stationery Office, Kingsway, W.C. 2. Price post free 3½*d.*

Department of Overseas Trade: Report on the Finance, Industry and Trade of Peru, September, 1922. By A. J. Hill. H.M. Stationery Office, Kingsway, W.C. 2. Price 9*d.* net. By post 10*d.*

The Legend of Saint Christopher. Retold by E. M. Tenison. E. M. Tenison. Yokes Court, near Sittingbourne, Kent.

Report on the Economic and Financial Situation in the Republics of Panama and Costa Rica. By Wm. Ewing and A. Murray. London: H.M. Stationery Office, Kingsway, W.C. 2. Price 1*s.* net. By post, 1*s.* 1½*d.*

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AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motor
The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1921

Published January 25, 1923

17,504. SPERRY GYROSCOPE CO. Arc lamps for projectors. (165,450.)
20,311. C. F. HEYWOOD. Driving equipments of aircraft. (190,746.)
22,820. LUFTSCHIFFBAU ZEPPELIN-GES. Gas outlets for airships. (168,878.)
25,025. FAIREY AVIATION CO., LTD., and C. R. FAIREY. Aeroplane controlling devices. (190,774.)
25,716. A. P. THURSTON and BRISTOL AEROPLANE CO., LTD. Aircraft, etc. (190,800.)
29,151. M. H. ANDERSON. Aeroplane propulsion. (190,855.)

APPLIED FOR IN 1922

Published January 25, 1923

9,068. A. FLETTNER. Steering device for aerial vessels, etc. (177,788.)

NOTICE TO ADVERTISERS

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